Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-36. (Canceled)

37. (New) A method for producing a honeycomb structure which comprises disposing a material for forming outer wall forming an outer wall upon firing on the outer peripheral surface of a cell structure having a plurality of cells serving as fluid flowing channels and partitioned by partition walls to produce a cell structure being provided with a material for forming outer wall and firing the resulting cell structure being provided with a material for forming outer wall to obtain a honeycomb structure comprising the cell structure provided with the outer wall on the outer peripheral surface, characterized in that in order to obtain, as the material for forming outer wall, such a material that the absolute value of the difference between the proportion of shrinkage in the size of the cell structure after firing to the size of the cell structure before firing and the proportion of shrinkage in the size of the material for forming outer wall after firing to the size of the material for forming outer wall before firing is not more than 0.5% in the relation between the material of the cell structure and the material for forming outer wall, the material for forming outer wall is prepared using at least one material selected from the group consisting of talc, calcined talc, kaolin, calcined kaolin, alumina, aluminum hydroxide, mullite and silica so that the material for forming outer wall after firing contains cordierite as a main component and contains a quartz powder in an amount of 1-15% by mass based on the whole material for forming outer wall, and the cell structure being provided with a material for forming outer wall is produced using the thus prepared material for forming outer wall and is fired.

38. (New) A method for producing a honeycomb structure according to claim 37, wherein the main component of the cell structure and/or outer wall is a ceramics.

39. (New) A method for producing a honeycomb structure according to claim 37, wherein the cell structure being provided with a material for forming outer wall is produced so that the absolute value of the difference between the coefficient of thermal expansion of the cell structure after firing and that of the outer wall after firing is not more than $0.7 \times 10^{-6}/°C$.

40. (New) A method for producing a honeycomb structure according to claim 37, wherein the cell structure being provided with a material for forming outer wall is produced so that the main component of the cell structure after firing becomes cordierite.

41. (New) A method for producing a honeycomb structure according to claim 37, wherein the cell structure is unfired, wherein the material for forming outer wall is disposed on the outer peripheral surface of the unfired cell structure to produce a cell structure being provided with a material for forming outer wall, and the resulting cell structure being provided with a material for forming outer wall is fired.

42. (New) A method for producing a honeycomb structure according to claim 37, wherein the cell structure is previously fired, the material for forming outer wall is disposed on the outer peripheral surface of the fired cell structure to produce the cell structure being provided with a material for forming outer wall, and the resulting cell structure being provided with a material for forming outer wall is fired.

43. (New) A method for producing a honeycomb structure according to claim 37, wherein the material for forming outer wall which forms the outer wall mainly composed of cordierite by firing is disposed.

44. (New) A method for producing a honeycomb structure according to claim 37, wherein the absolute value of the difference between the proportion of shrinkage in the size of the cell structure after firing to the size of the cell structure before firing and the proportion of shrinkage in the size of the material for forming outer wall after firing to the size of the material for forming outer wall before firing is not more than 0.3%.

45. (New) A method for producing a honeycomb structure according to claim 44, wherein an absolute value of difference between the thermal expansion coefficient of the cell structure after firing and that of the outer wall after firing is not more than 0.4×10^{-6}/℃.

46. (New) A method for producing a honeycomb structure according to claim 45, wherein the cell structure after firing has a section formed by cutting along a plane perpendicular to the central axis whose maximum diameter is 150 mm or more.

47. (New) A method for producing a honeycomb structure according to claim 44, wherein the cell structure has an outer peripheral surface being formed of the surface of the outer peripheral wall provided on the outside of the cells positioned at the outermost periphery among a plurality of the cells.

48. (New) A method for producing a honeycomb structure according to claim 44, wherein the cell structure has an outer peripheral surface being formed of the surface of the partition walls of the cells positioned at the outermost periphery among a plurality of the cells.

49. (New) A method for producing a honeycomb structure according to claim 44, wherein the outer peripheral surface of the cell structure is formed by grinding at least a part of the outer peripheral wall of the cell structure comprising a plurality of cells serving as fluid flowing channels and provided with the outer peripheral wall on the outside of the cells positioned at the outermost periphery among a plurality of the cells.

50. (New) A method for producing a honeycomb structure according to claim 44, wherein the surface of the outer wall of the honeycomb structure is subjected to a surface working.

51. (New) A method for producing a honeycomb structure according to claim 44, wherein the honeycomb structure is cylindrical and difference between the maximum diameter and the minimum diameter of the cylindrical honeycomb structure is not more than 1 mm.

52. (New) A method for producing a honeycomb structure according to claim 37, wherein kaolin is used as a raw material for the cell structure and the material for forming outer wall, wherein an average particle diameter of kaolin used as the material for forming outer wall is 1/10 or more and 1/2 or less of an average particle diameter of kaolin used as the raw material for the cell structure.

53. (New) A honeycomb structure comprising a cell structure provided with an outer wall on the outer peripheral surface thereof which is produced by firing a cell structure being

provided with a material for forming outer wall comprising a cell structure having a plurality of cells serving as fluid flowing channels and partitioned by partition walls and a material for forming outer wall which is disposed on the outer peripheral surface of the cell structure and forms an outer wall upon firing on the cell structure, characterized in that the outer wall comprises such a material that the absolute value of the difference between the proportion of shrinkage in the size of the cell structure after firing to the size of the cell structure before firing and the proportion of shrinkage in the size of the material for forming outer wall after firing to the size of the material for forming outer wall before firing is not more than 0.5%, and the outer wall contains at least one material selected from the group consisting of talc, calcined talc, kaolin, calcined kaolin, alumina, aluminum hydroxide, mullite and silica so that the material for forming outer wall after firing contains cordierite as a main component and contains a quartz powder in an amount of 1-15% by mass based on the whole of the material for forming outer wall.

54. (New) A honeycomb structure according to claim 53, wherein the main component of the cell structure and/or outer wall is a ceramics.

55. (New) A honeycomb structure according to claim 53, wherein the absolute value of the difference between the coefficient of thermal expansion of the cell structure after firing and that of the outer wall after firing is not more than $0.7 \times 10^{-6}/°C$.

56. (New) A honeycomb structure according to claim 53, wherein the main component of the cell structure after firing is cordierite.

57. (New) A honeycomb structure according to claim 53, wherein the cell structure is a fired cell structure produced by firing a cell structure being provided with a material for forming outer wall comprising an unfired cell structure and a material for forming outer wall disposed on the outer peripheral surface of the unfired cell structure.

58. (New) A honeycomb structure according to claim 53, wherein the cell structure is a fired cell structure produced by firing a cell structure being provided with a material for forming outer wall comprising a cell structure fired in advance and a material for forming outer wall disposed on the outer peripheral surface of a fired cell structure.

59. (New) A honeycomb structure according to claim 53, wherein the main component of the outer wall after firing is cordierite.

60. (New) A honeycomb structure according to claim 53, wherein the cell structure being provided with a material for forming outer wall is produced so that the absolute value of the difference between the proportion of shrinkage in the size of the cell structure after firing to the size of the cell structure before firing and the proportion of shrinkage in the size of the material for forming outer wall after firing to the size of the material for forming outer wall before firing is not more than 0.3%.

61. (New) A honeycomb structure according to claim 53, wherein the absolute value of the difference between the coefficient of thermal expansion of the cell structure after firing and that of the outer wall after firing is not more than $0.4 \times 10^{-6}/℃$.

62. (New) A honeycomb structure according to claim 53, wherein the cell structure has a section formed by cutting the cell structure after firing along a plane perpendicular to the central axis whose maximum diameter is not less than 150 mm.

63. (New) A honeycomb structure according to claim 53, wherein the cell structure has an outer peripheral surface being formed of the surface of the outer peripheral wall provided on the outside of the cells positioned at the outermost periphery among a plurality of the cells.

64. (New) A honeycomb structure according to claim 53, wherein the cell structure has an outer peripheral surface being formed of the surface of the partition walls of the cells positioned at the outermost periphery among a plurality of the cells.

65. (New) A honeycomb structure according to claim 53, wherein the outer peripheral surface of the cell structure is formed by grinding at least a part of the outer peripheral wall of the cell structure comprising a plurality of cells serving as fluid flowing channels and provided with the outer peripheral wall on the outside of the cells positioned at the outermost periphery among a plurality of the cells.

66. (New) A honeycomb structure according to claim 53, wherein the surface of the outer wall of the honeycomb structure provided with the outer wall on the outer peripheral surface of the cell structure is subjected to a surface working.

67. (New) A honeycomb structure according to claim 53, wherein the honeycomb structure is cylindrical and the difference between the maximum diameter and the minimum diameter of the cylindrical honeycomb structure is not more than 1 mm.

68. (New) A honeycomb structure according to claim 53, wherein the cell structure and the outer wall contain kaolin and the average particle diameter of kaolin contained in the material for forming outer wall is 1/10 or more and 1/2 or less of the average particle diameter of kaolin contained in the cell structure.